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Search History

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L1	6611740.pn. or 6246325.pn. or 6151491.pn. or 6429812.pn.	4	L1

END OF SEARCH HISTORY

L6: Entry 1 of 1 File: USPT Nov 21, 2000

DOCUMENT-IDENTIFIER: US 6151491 A
TITLE: Mobile voice message/electronic mail system

Detailed Description Text (16):
Registration may be enabled or disabled individually for each class of mobile phone, e.g., home or roam (explained below), by means of control bits in the system parameter overhead message. The system parameter overhead message also contains the identification number of the serving cellular system from which the mobile phone determines whether it is a "home" or a "roam" mobile phone. Each mobile phone contains, in its internal memory, an entry indicating the identity of its home cellular system and an entry indicating the cellular systems (which may be the home cellular system) in which it has most recently registered successfully. It also stores a value for the cellular system used to determine when it is scheduled to re-register in that cellular system.

Detailed Description Text (26):
Registration may be enabled or disabled individually for each class of mobile phone, e.g., home or roam (explained below), by means of control bits in the system parameter overhead message in step R24. The system parameter overhead message also contains the identification number of the serving cellular system from which the mobile phone determines whether it is a "home" or a "roam" mobile phone in step R26. Each mobile phone contains, in its internal memory, an entry indicating the identity of its home cellular system and an entry indicating the cellular systems (which may be the home cellular system) in which it has most recently registered successfully. It also stores a value for the cellular system used to determine when it is scheduled to re-register in that cellular system.

DOCUMENT-IDENTIFIER: US 6611740 B2
TITLE: Internet-based vehicle-diagnostic system

Brief Summary Text (4):
The Environmental Protection Agency (EPA) requires vehicle manufacturers to install on-board diagnostics (OBD-II) for monitoring light-duty automobiles and trucks beginning with model year 1996. OBD-II systems (e.g., microcontrollers and sensors) monitor the vehicle's electrical and mechanical systems and generate data that are processed by a vehicle's engine control unit (ECU) to detect any malfunction or deterioration in the vehicle's performance. Most ECUs transmit status and diagnostic information over a shared, standardized electronic buss in the vehicle. The buss effectively functions as an on-board computer network with many processors, each of which transmits and receives data. The primary computers in this network are the vehicle's electronic-control module (ECM) and power-control module (PCM). The ECM typically monitors engine functions (e.g., the cruise-control module, spark controller, exhaust/gas recirculator), while the PCM monitors the vehicle's power train (e.g., its engine, transmission, and braking systems). Data available from the ECM and PCM include vehicle speed, fuel level, engine temperature, and intake manifold pressure. In addition, in response to input data, the ECU also generates 5-digit `diagnostic trouble codes` (DTCs) that indicate a specific problem with the vehicle. The presence of a DTC in the memory of a vehicle's ECU typically results in illumination of the `Service Engine Soon` light present on the dashboard of most vehicles.

Brief Summary Text (5):
Data from the above-mentioned systems are made available through a standardized, serial 16-cavity connector referred to herein as an `OBD-II connector`. The OBD-II connector typically lies underneath the vehicle's dashboard. When a vehicle is serviced, data from the vehicle's ECM and/or PCM is typically queried using an external engine-diagnostic tool (commonly called a `scan tool`) that plugs into the OBD-IL connector. The vehicle's engine is turned on and data are transferred from the engine computer, through the OBD-II connector, and to the scan tool. The data are then displayed and analyzed to service the vehicle. Scan tools are typically only used to diagnose stationary vehicles or vehicles running on a dynamometer.

Brief Summary Text (6):
Some vehicle manufacturers also include complex electronic systems in their vehicles to access and analyze some of the above-described data. For example, General Motors includes a system called `On-Star` in some of their high-end vehicles. On-Star collects and transmits data relating to these DTCs through a wireless network. On-Star systems are not connected through the OBD-II connector, but instead are wired directly to the vehicle's electronic system. This wiring process typically takes place when the vehicle is manufactured.

Brief Summary Text (8):
Embodiments of the invention can provide a wireless, internet-based system for monitoring a vehicle. For example, embodiments of the invention can access data from a vehicle, analyze it, and make it available to organizations (e.g. an

automotive dealership or service center) over the internet so that the vehicle's performance can be analyzed accurately and in real-time. Data are accessed through the same OBD-II connector used by conventional scan tools. In this way, the invention collects data similar to those collected by scan tools, only they are collected in real-time while the vehicle is actually being driven. The invention also provides an Internet-based web site to view these data. The web site also includes functionality to modify the type of data being collected, e.g. the type of diagnostic data or the frequency at which it is collected. The data can be collected and viewed over the Internet without having to bring the vehicle in for service. The data include, for example, DTCs and mechanical and electrical data stored in the vehicle's engine computer.

Brief Summary Text (28):
The wireless appliance used to access and transmit the vehicle's data is small, low-cost, and can be easily installed in nearly every vehicle with an OBD-II connector in a matter of minutes. It can also be easily transferred from one vehicle to another, or easily replaced if it malfunctions.

Detailed Description Text (3):
The wireless appliance 13 disposed within the vehicle 12 collects diagnostic data from the vehicle's engine computer 15. The engine computer 15 retrieves data stored in its memory and sends it along a cable 16 to the wireless appliance 13. The appliance 13 typically connects to the OBD-II connector located under the dash in all vehicles manufactured after 1996. It includes a data-collection component (not shown in the figure) that formats the data in a packet and then passes the packet to a data-transmission component, which sends it through a cable 17 to an antenna 14. To generate the data, the wireless appliance 13 queries the vehicle's computer 15 at a first time interval (e.g. every 20 seconds), and transmits a data set at a longer time interval (e.g. every 10 minutes). These time intervals are specified in a data-collection `schema`, described in more detail below.

Detailed Description Text (16):
The parameters listed in Table 1 were measured from a Ford Crown Victoria. Similar sets of data are available for nearly all vehicles manufactured after 1996 that have an OBD-II connector. In addition to these, hundreds of other vehicle-specific parameters are also available from the vehicle's computer.

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L3: Entry 1 of 2 File: USPT Aug 26, 2003

DOCUMENT-IDENTIFIER: US 6611740 B2
TITLE: Internet-based vehicle-diagnostic system

Brief Summary Text (18):
The host computer system typically features at least one web-hosting computer that hosts the web site, and at least one, separate gateway computer that receives the outgoing data packet and sends the incoming data packet. In this embodiment the web site features a first web page that displays at least a single vehicle diagnostic datum. For example, the first web page can include data fields describing: i) a name of the diagnostic datum; ii) units corresponding to the diagnostic datum; and iii) a numerical value corresponding to the diagnostic datum. Multiple sets of diagnostic data, each received by the host computer system at a unique time and date, can also be displayed on the web page. The page can also include a graphical representation of the sets of diagnostic data, e.g. a time-dependent plot of the data.

Brief Summary Text (22):
The gateway computer that receives the outgoing data packet and sends the incoming data packet is connected to the network, typically through an Internet-based connection or a digital communication line.

CLAIMS:

8. The system of claim 1, wherein the system comprises a host computer system that includes at least one web-hosting computer that hosts an internet-based web site, and at least one, separate gateway computer that receives outgoing data and sends incoming data.

19. The system of claim 8, wherein the gateway computer that receives the outgoing data packet and sends the incoming data packet is connected to the network.

20. The system of claim 19, wherein the gateway computer is connected to a digital communication line that is connected to the network.

L11: Entry 2 of 3 File: USPT Jun 12, 2001

DOCUMENT-IDENTIFIER: US 6246325 B1
TITLE: Distributed communications system for reducing equipment down-time

Abstract Text (1):
A system and method to more efficiently exchange information between a service provider, such as a semiconductor company, and its remote equipment units. The system capable of immediately handling a number of information items, each belonging to a different remote equipment unit is disclosed. The system includes a central controller configured for interfacing with a plurality of remote equipment units via a wireless network. The central controller is configured to receive information from each remote equipment unit via a wireless network. This information includes alarm conditions and corresponding requests for repair. Each of the remote equipment units is identified by a unique code which is included in the information transmitted to the computer to identity the source (i.e., identity of the transmitting remote equipment unit). The central controller uses the code of the transmitting remote equipment unit to retrieve the corresponding data record stored in its memory. The repair person identified in the selected data record is then contacted automatically, e.g., by wireless paging. The system may be programmed with a pre-determined routine maintenance schedule for each remote equipment unit. Based on this schedule, the system automatically contacts the appropriate repair person by wireless paging and dispatches the repair person to the corresponding remote equipment unit for routine maintenance. Thus, the down-time of the remote equipment unit is reduced because the alarm condition is immediately transmitted to the central controller and the corresponding repair person is contacted automatically. There is no undesired down-time before monitoring personnel notices the alarm condition and contacts the corresponding repair person.

Brief Summary Text (13):
In accordance with one embodiment of the present invention, a distributed communications system capable of immediately handling a number of information items, each belonging to a different remote equipment unit is disclosed. The distributed communications system includes a central controller configured for interfacing with a plurality of remote equipment units via a wireless network. The central controller is configured to receive information from each remote equipment unit via a wireless network. This information includes alarm conditions and corresponding requests for repair. Each of the remote equipment units is identified by a unique code which is included in the information transmitted to the computer to identity the source (i.e., identity of the transmitting remote equipment unit). The central controller uses the code of the transmitting remote equipment unit to retrieve the corresponding data record stored in its memory. The repair person identified in the selected data record is then contacted automatically, e.g., by wireless paging.

Brief Summary Text (15):
The distributed communications system of the present invention is also capable of keeping track of routine maintenance schedules. The distributed communications system may be programmed with a pre-determined routine maintenance schedule for each remote equipment unit. Based on this schedule, the distributed communications system automatically contacts the appropriate repair person by wireless paging and

dispatches the repair person to the corresponding remote equipment unit for routine maintenance.

Detailed Description Text (13):
Base-station 208 is also configured to transmit signals tot he wireless pagers of the repair person via paging channel 240. Generally, base-station 208 receives paging signals generated by central controller 130 and forwards these paging signals to a paging tower 250 via paging channel 240. Paging tower 250 is configured to transmit these paging signals to the wireless pagers of the repair persons. In the preferred embodiment, base-station 208 and MTSO 210 are part of a code-division multiple-access (CDMA) spread spectrum communication system. Additionally, wireless network 120 may be designed in accordance with the Telecommunications Industry Association Electronic Industries Association (TIA/EIA) Interim Standard 95 (IS-95) standard, entitled "Mobile Station Base-Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System." Alternatively, the wireless communication system may be designed in accordance with the ANSI J-STD-008, standard entitled "Personal Station-Base-Station Compatibility Requirements for 1.8 to 2.0 GHz Code Division Multiple Access (CDMA) Personal Communications Systems."

CLAIMS:

7. The method of claim 1, wherein the service request comprises a paging message to a pager of the repair person.

14. The central controller of claim 8, wherein the service request comprises a paging message to a pager of the repair person.

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L13: Entry 1 of 2 File: USPT Aug 26, 2003

DOCUMENT-IDENTIFIER: US 6611740 B2
TITLE: Internet-based vehicle-diagnostic system

Brief Summary Text (30):
Moreover, software schemas that update the type or frequency of the vehicle's data can be directly downloaded to specific wireless appliances or groups of wireless appliances (corresponding, e.g., to a fleet of vehicles or a group of vehicles having the same year, make, or model). This makes it possible to collect data that specifically elucidates a problem with the vehicle that may occur only under certain driving conditions.

L12: Entry 1 of 1 File: USPT Aug 6, 2002

DOCUMENT-IDENTIFIER: US 6429812 B1
TITLE: Mobile communication device

Brief Summary Text (35):
Systems which integrate GPS, GLONASS, LORAN or other positioning systems into vehicular guidance systems are well known, and indeed navigational purposes were prime motivators for the creation of these systems. Radar, laser, acoustic and visual sensors have all been applied to vehicular guidance and control, as well. For example, U.S. Pat. No. 4,757,450 relates to a reflected beam system for detecting a preceding vehicle, in order to allow control over intervehicular spacing. U.S. Pat. No. 4,833,469 relates to an obstacle proximity sensor, employing, e.g., a radar beam to determine distance and relative velocity of an obstacle. U.S. Pat. No. 5,600,561 relates to a vehicle distance data processor which computes a velocity vector based on serial timepoints. U.S. Pat. No. 4,552,456 relates to an optical pulse radar for an automobile. U.S. Pat. No. 4,543,577 relates to a moving obstacle detection system for a vehicle, using Doppler radar. U.S. Pat. No. 4,349,823 relates to an automotive radar system for monitoring objects in front of the vehicle. U.S. Pat. No. 5,473,538 relates to a collision judging system for a vehicle, triggered by a braking event and determining a distance to an obstacle in front of the vehicle. U.S. Pat. No. 4,168,499 relates to an anti-collision radar system. U.S. Pat. No. 4,626,850 relates to a vehicle detection and collision avoidance apparatus, using an acoustic sensor. U.S. Pat. No. 4,028,662 relates to a passing vehicle signaling apparatus, to detect adjacent vehicles during a lane change. U.S. Pat. No. 5,541,590 relates to a vehicle crash predictive and evasive system, employing neural networks. U.S. Pat. No. 5,646,612 relates to a vehicle collision avoidance system, using an infrared imaging system. U.S. Pat. No. 5,285,523 relates to a neural network system for recognizing driving conditions and controlling the vehicle in dependence thereon. U.S. Pat. No. 5,189,619 relates to an artificial intelligence based adaptive vehicle control system. U.S. Pat. No. 5,162,997 relates to a driver-adaptive automobile control system. U.S. Pat. No. 3,689,882 relates to an anti-collision radar system for detecting obstacles or on-coming vehicles.

Brief Summary Text (47):
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Brief Summary Text (53):
The position detector may also be linked to a mapping system and possibly a dead reckoning system, in order to pinpoint a position with a geographic landmark. Thus,

while precise absolute coordinate measurements of position may be used, it may also be possible to obtain useful data at reduced cost by applying certain presumptions to available data. In an automotive system, steering angle, compass direction, and wheel revolution information may be available, thereby giving a rough indication of position from a known starting point. When this information is applied to a mapping system, a relatively precise position may be estimated. Therefore, the required precision of another positioning system used in conjunction need not be high, in order to provide high reliability position information. For example, where it is desired to map potholes, positional accuracy of 10 cm may be desired, far more precise than might be available from a normal GPS receiver mounted in a moving automobile. However, when combined with other data, location and identification of such events is possible. Further, while the system may include or tolerate inaccuracies, it is generally desired that the system have high precision, as compensation for inaccuracies may be applied.

Brief Summary Text (59):
Potholes and other road obstructions and defects have two characteristics. First, they adversely effect vehicles which encounter them. Second, they often cause a secondary effect of motorists seeking to avoid a direct encounter or damage, by slowing or executing an evasive maneuver. These obstructions may therefore be detected in three ways; first. by analyzing the suspension of the vehicle for unusual shocks indicative of such vents; second, by analyzing speed and steering patterns of the subject vehicle and possibly surrounding vehicles; and third, by a visual, ultrasonic, or other direct sensor for detecting the pothole or other obstruction. Such direct sensors are known; however, their effectiveness is limited, and therefore an advance mapping of such potholes and other road obstructions greatly facilitates avoiding vehicle damage and executing unsafe or emergency evasive maneuvers. An advance mapping may also be useful in remediating such road hazards, as well.

Brief Summary Text (60):
Traffic jams occur for a variety of reasons. Typically, the road carries traffic above a threshold, and for some reason the normal traffic flow patterns are disrupted. Therefore, there is a dramatic slowdown in the average vehicle speed, and a reduced throughput. Because of the reduced throughput, even after the cause of the disruption has abated, the roadways may take minutes to hours to return to normal. Therefore, it is typically desired to have advance warnings of disruptions, which include accidents, icing, rain, sun glare, lane closures, road debris, police action, exits and entrances, and the like, in order to allow the driver to avoid the involved region or plan accordingly. Abnormal traffic patterns may be detected by comparing a vehicle speed to the speed limit or a historical average speed, by a visual evaluation of traffic conditions, or by broadcast road advisories. High traffic conditions are associated with braking of traffic, which in turn results in deceleration and the illumination of brake lights. Brake lights may be determined by both the specific level of illumination and the center brake light, which is not normally illuminated. Deceleration may be detected by an optical, radar or LIDAR sensor for detecting the speed and/or acceleration state of nearby vehicles.

Brief Summary Text (61):
While a preferred embodiment of the present invention employs one or more sensors, broadcast advisories, including those from systems according to or compatible with the present invention, provide a valuable source of information relating to road conditions and information of interest at a particular location. Therefore, the sensors need not form a part of the core system. Further, some or all of the required sensors may be integrated with the vehicle electronics ("vetronics"), and therefore the sensors may be provided separately or as options. It is therefore an aspect of an embodiment of the invention to integrate the transceiver, and event database into a vetronics system, preferably using a digital vetronics data bus to communicate with existing systems, such as speed sensors, antilock brake sensors, cruise control, automatic traction system, suspension, engine, transmission, and